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EXAMINER	
WARE, CICELY Q	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/915,748	FRENKEL ET AL.	
	Examiner	Art Unit	
	Cicely Ware	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6,14-16,18-21,23-30,32-34,43-45,50 and 51* is/are rejected.

7)☒ Claim(s) *2,7-13,17,22,31,35-42,46-49 and 52-60* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

a. Pg. 1, examiner suggests applicant delete bottom lines of Pg. 1.

b. Pg. 2, line 4, examiner suggests applicant unbold "42".

c. Pg. 4, line 10, applicant uses the phrase "DFE main remain". Examiner suggests using "DFE may remain for clarification purposes.

d. Pg. 4, line 21 examiner suggests applicant move Pg. 5, line 1 to Pg. 4 for clarification purposes.

e. Pg. 8, line 29, examiner suggests applicant delete spaces on this line for clarification purposes.

f. Pg. 9, line 4, applicant uses the phrase "response filter have a number". Examiner suggests applicant use "response filter having a number" for clarification purposes.

g. Pg. 13, line 25, examiner suggests applicant move Pg. 14, line 1 to Pg. 13 for clarification purposes.

h. Pg. 14, line 23, examiner suggests applicant move Pg. 15, line 1 to Pg. 14.

i. Pg. 18, line 7, applicant uses "[-M,M)". Examiner suggests applicant choose either brackets or parentheses for this range for clarification purposes.

j. Pg. 23, line 10-11, applicant uses the phrase "same manner as can

receiver 50". Examiner suggests using "same manner as receiver 50" for clarification purposes.

Appropriate correction is required.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claims 1 and 38 are objected to because of the following informalities:

a. Claim 1, line 22, applicant uses the phrase "coefficients is conveyed". Examiner suggests using "coefficients are conveyed" for clarification purposes.

b. Claim 38, line 4, applicant uses the phrase "filter have a number". Examiner suggests using "filter having a number" for clarification purposes.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3-6,16,18-21, 23-25, 28, 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Fig. 2) in view of Ling et al. (US Patent 6,167,082).

(1) With regard to claim 1, Applicant's Admitted Prior Art discloses in (Fig. 2) a receiver (20), which is coupled to receive the signal over the channel, and which comprises: a feed-forward equalizer (22), adapted to apply a feed-forward equalization function to the signal, so as to generate a sequence of equalized samples; a decision block (30), which is coupled to receive the equalized samples from the FFE (22) and to generate sequence a sequence of decision output samples responsive thereto, the decision block comprising an adaptive filter (32), having coefficients determined adaptively responsive to a characteristic of the channel, and indication of which coefficients are conveyed by the receiver to the transmitter for implementation in the precoder.

However Applicant's Admitted Prior Art does not disclose a transmitter, which comprise a Tomlinson-Harashima precoder, which is coupled to receive and precode a sequence of input symbols, so as to generate a corresponding sequence of precoded symbols; and transmit circuitry, which is adapted to process the precoded symbols so

as to generate a signal for transmission over a communication channel; and a Tomlinson-Harashima decoder, which is coupled to receive a sequence of input samples comprising at least one of the sequence of decision output samples generated by the decision block and the sequence of equalized samples generated by the FFE, and to decode the input samples in order to reconstruct the sequence of input symbols.

However Ling et al. discloses in (Fig. 3) a transmitter (300), which comprise a Tomlinson-Harashima precoder (324), which is coupled to receive and precode a sequence of input symbols, so as to generate a corresponding sequence of precoded symbols; and transmit circuitry, which is adapted to process the precoded symbols so as to generate a signal for transmission over a communication channel; and a Tomlinson-Harashima decoder (Fig. 3 (380), Fig. 7 (720)), which is coupled to receive a sequence of input samples comprising at least one of the sequence of decision output samples(Fig. 7 (740, 730)) generated by the decision block and the sequence of equalized samples generated by the FFE (Fig. 7 (710), and to decode the input samples in order to reconstruct the sequence of input symbols.

Therefore it would have been obvious to one of ordinary skill in the art to modify Applicant's Admitted Prior Art to incorporate a transmitter, which comprise a Tomlinson-Harashima precoder, which is coupled to receive and precode a sequence of input symbols, so as to generate a corresponding sequence of precoded symbols; and transmit circuitry, which is adapted to process the precoded symbols so as to generate a signal for transmission over a communication channel; and a Tomlinson-Harashima decoder, which is coupled to receive a sequence of input samples comprising at least

one of the sequence of decision output samples generated by the decision block and the sequence of equalized samples generated by the FFE, and to decode the input samples in order to reconstruct the sequence of input symbols in order to equalize the minimum-phase response and provide optimum solution of error control coding and accurate immediate decisions for ISI subtraction to induce performance degradation when high gain error control is necessary (Ling et al., col. 2, lines 45-52).

(2) With regard to claim 3, claim 3 inherits all the limitations of claim 1. Ling et al. further discloses in (Fig. 3) wherein the Tomlinson-Harashima precoder (324) is adapted to precode the input symbols such that the precoded symbols are within a predetermined modulo range and, wherein the decision block comprises an extended slicer (370, 380), which is adapted to generate the decision output samples over an extended range that is greater then the modulo range (col. 3, lines 22-24).

(3) With regard to claim 4, claim 4 inherits all the limitations of claim 1. Applicant's Admitted Prior Art further discloses in (Fig. 2) wherein the adaptive filter comprises a decision feedback equalizer (32).

(4) With regard to claim 5, claim 5 inherits all the limitations of claim 1. Applicant's Admitted Prior Art further discloses in (Fig. 2) wherein the adaptive filter comprises an adaptive error predictor (38).

(5) With regard to claim 6, claim 6 inherits all the limitations of claim 1. Applicant Admitted Prior Art further discloses in (Fig. 2) wherein the Tomlinson-Harashima decoder (26) is coupled to receive the sequence of equalized samples generated by the FFE (22), and wherein the receiver further comprises a decisions device (30) which is

coupled to receive the decoded input samples from the decoder (26) and to generate the reconstructed input symbols.

(6) With regard to claim 16, claim 16 inherits all the limitations of claim 1. Ling et al. further discloses in (Fig. 3) a receiver (312) for receiving a signal transmitted over a channel by a transmitter that includes a Tomlinson-Harashima precoder (300, 324), the receiver comprising: a Tomlinson-Harashima decoder (Fig. 3 (380), Fig. 7 (720)), which is coupled to receive and decode the decision output samples (740, 730) so as to reconstruct the sequence of the input symbols.

(7) With regard to claim 18, claim 18 inherits all the limitations of claim 16. Ling et al. further discloses in (Fig. 3) wherein the Tomlinson-Harashima decoder (380) has a predetermined modulo range, and wherein the decision block comprises an extended slicer (370), which is adapted to generate the decision output samples over an extended range that is greater that the modulo range (col. 3, lines 22-24).

(8) With regard to claim 19, claim 19 inherits all the limitations of claims 16 and 4.

(9) With regard to claim 20, claim 20 inherits all the limitations of claims 16 and 5.

(10) With regard to claim 21 inherits all the limitations of claims 1 and 16. Applicant's Admitted Prior Art further discloses in (Fig. 2) a Tomlinson-Harashima decoder (26), which is coupled to receive and decode the equalized samples from the FFE (22); and a decision device (30), which is coupled to receive and process the decoded samples from the decoder so as to reconstruct the input symbols.

(11) With regard to claim 23, claim 23 inherits all the limitations of claims 21 and 18.

(12) With regard to claim 24, claim 24 inherits all the limitations of claims 21 and 4.

(13) With regard to claim 25, claim 25 inherits all the limitations of claims 21 and 5.

(14) With regard to claim 28, claim 28 inherits all the limitations of claim 1. Ling et al. further discloses in (Fig. 3) a method for conveying data over a communication channel, comprising: precoding a sequence of input symbols (322) at a transmitter (300) using a Tomlinson-Harashima precoder having a predetermined modulo range (324); determining a sequence of decision output values of the received samples over a range of values greater than the modulo range of the precoder (370); conveying an indication of the coefficient values to the transmitter for implementation in the precoder (Fig. 7 (750)) (col. 3, lines 22-24).

(15) With regard to claim 32, claim 32 inherits all the limitations of claim 28. Applicant Admitted Prior Art further discloses in (Fig. 2) wherein processing the decisions output values (30) comprises applying decision feedback equalization (32) to the received samples using the values, so that the filter coefficients comprise adaptive decision feedback equalization coefficients.

(16) With regard to claim 33, claim 33 inherits all the limitations of claim 28. Applicant's Admitted Prior Art further discloses in (Fig. 2) wherein processing the decision output values (30) comprises applying error prediction (38) to the received samples using the values, so that the filter coefficients comprise adaptive error prediction coefficients (38).

(17) With regard to claim 34, claim 34 inherits all the limitations of claim 28. Applicant's Admitted Prior Art further discloses in (Fig. 2) wherein decoding the sequences of input samples (26) comprises applying a modulo operation to the sequence of received samples so as to generate decoded samples within the predetermined modulo range, and applying a decision device (30) to the decoded samples so as to reconstruct the input symbols.

6. Claims 14, 15, 26, 27, 29, 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Fig. 2) in combination with Ling et al. (US Patent 6,167,082) as applied to claims 1, 21 and 28 above, and further in view of Gadot et al. (US Patent 5,513,216) (cited by applicant).

(1) With regard to claim 14, claim 14 inherits all the limitations of claim 1. Applicant's Admitted Prior Art in combination with Ling et al. disclose all the limitations of claim 1 above. However Applicant's Admitted Prior Art in combination with Ling et al. do not disclose wherein the Tomlinson-Harashima precoder comprises a feedback loop filter, and wherein the indication of the coefficients conveyed by the receiver to the transmitter comprises values of the coefficients, based upon which a filter response of the feedback loop filter is calculated and implemented at the transmitter.

However Gadot et al. discloses in (Fig. 7) wherein the Tomlinson-Harashima precoder comprises a feedback loop filter (615), and wherein the indication of the coefficients conveyed by the receiver to the transmitter comprises values of the

coefficients, based upon which a filter response of the feedback loop filter is calculated and implemented at the transmitter (620) (col. 8, lines 45-51.

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Applicant's Admitted Prior Art in combination with Ling et al. to incorporate wherein the Tomlinson-Harashima precoder comprises a feedback loop filter, and wherein the indication of the coefficients conveyed by the receiver to the transmitter comprises values of the coefficients, based upon which a filter response of the feedback loop filter is calculated and implemented at the transmitter because the filter must provide some filter response as a function of the adaptation of the DFE in the receiver for optimal DFE performance (Gadot et al., col. 8, lines 46-50).

(2) With regard to claim 15, claim 15 inherits all the limitations of claim 1. Gadot et al. further discloses in (Fig. 7) wherein the Tomlinson-Harashima precoder comprises a feedback loop filter (616), and wherein a filter response of the feedback loop filter is calculated at the receiver based on the coefficients, such that the indication of the coefficients conveyed by the receiver to the transmitter comprises that calculated filter response (Fig. 3 (10, 20)), col. 8, lines 45-51).

(3) With regard to claim 26, claim 26 inherits all the limitations of claim 21. Gadot et al. further discloses in (Fig. 7) wherein the indication of the coefficients conveyed by the receiver to the transmitter comprises values of the coefficients for calculation of the filter response of a feedback loop filter (615) in the Tomlinson-Harashima precoder based on the values (Fig. 3 (10, 20), col. 8, lines 27-51).

(4) With regard to claim 27, claim 27 inherits all the limitations of claim 21. Gadot et al. further discloses in (Fig. 7) wherein a filter of a feedback loop filter (615) in the Tomlinson-Harashima precoder is calculated at the receiver based on the coefficients, such that the indication of the coefficients conveyed by the receiver to the transmitter comprises the calculated filter response (Fig. 3 (10, 20), col. 8, lines 45-51).

(4) With regard to claim 29, claim 29 inherits all the limitations of claims 28 and 26.

(5) With regard to claim 30, claim 30 inherits all the limitations of claims 28 and 27.

7. Claims 43-45, 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Fig. 2) in view of Gadot et al. (US Patent 5,513,216) (cited by applicant).

(1) With regard to claim 43, Applicant's Admitted Prior Art discloses in (Fig. 2) applying feed-forward equalization to the signal at the receiver, with an adaptive feed-forward equalization response FFE(z) (22), to generate a sequence of equalized samples; processing the equalized samples using an adaptive feedback filter (32) so as to determine feedback filter coefficient values responsive to a characteristic of the channel; updating the values of DEFET(z) (32) and FFE(z) (22) responsive to the feedback filter coefficient values; and decoding the equalized samples using Tomlinson-Harashima decoder (26) at the receiver so as to reconstruct the sequence of input symbols.

However Applicant's Admitted Prior Art does not disclose a method for conveying data over a communication channel, comprising: precoding a sequence of input symbols at a transmitter using a Tomlinson-Harashima precoder and a feedback loop filter having a filter response DFET(z); transmitting the precoded symbols as a signal over the communication channel from the transmitter to a receiver and conveying an indication of the feedback filter coefficient values to the transmitter for implementation in the feedback loop filter of the precoder.

However Gadot et al. discloses in (Fig. 7) a method for conveying data over a communication channel, comprising: precoding a sequence of input symbols at a transmitter using a Tomlinson-Harashima precoder and a feedback loop filter having a filter response DFET(z) (615, 616); transmitting the precoded symbols as a signal over the communication channel from the transmitter to a receiver (Fig. 3 (10, 20), Fig. 7 (621)) and conveying an indication of the feedback filter coefficient values to the transmitter (611) for implementation in the feedback loop filter of the precoder (col. 8, lines 27-51).

Therefore it would have been obvious to one of ordinary skill in the art to modify Applicant's Admitted Prior Art to incorporate precoding a sequence of input symbols at a transmitter using a Tomlinson-Harashima precoder and a feedback loop filter having a filter response DFET(z); transmitting the precoded symbols as a signal over the communication channel from the transmitter to a receiver and conveying an indication of the feedback filter coefficient values to the transmitter for implementation in the feedback loop filter of the precoder because the filter must provide some filter response

as a function of the adaptation of the DFE in the receiver for optimal DFE performance (Gadot et al., col. 8, lines 46-50).

(2) With regard to claim 44, claim 44 inherits all the limitations of claim 43. Gadot et al. further discloses in (Fig. 7) wherein conveying the indication comprises conveying the values of the coefficients, and wherein updating the value of DFET(z) comprises calculating an updated value of DFET(z) at the transmitter based on the values of the coefficients (col. 8, lines 27-51).

(3) With regard to claim 45, claim 45 inherits all the limitations of claim 43. Gadot et al. further discloses in (Fig. 7) wherein conveying the indication comprises calculating an updated value of DFET(z) (615) at the receiver based on the coefficient values and conveying the calculated value to the transmitter (col. 8, lines 27-51).

(4) With regard to claim 50, claim 51 inherits all the limitations of claim 43. Applicant's Admitted Prior Art further discloses in (Fig. 2) wherein processing the equalized samples (22) comprises applying error prediction (38) to the samples, so that the filter coefficient values comprise values corresponding to an error prediction response.

(5) With regard to claim 51, claim 51 inherits all the limitations of claim 50. Applicant's Admitted Prior Art further discloses in (Fig. 2) wherein processing the equalized samples (22) further comprises applying decision feedback equalization (32) to the samples, so that the filter coefficient values comprise further values corresponding to decision feedback equalization response.

Allowable Subject Matter

8. Claims 2, 7-13, 17, 22, 31, 35-42, 46-49, 52-60 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The instant application discloses a receiver, for receiving a signal transmitted over a channel by a transmitter that includes a Tomlinson-Harashima precoder. Prior art references show similar methods but fail to teach: **"wherein the equalized samples do not undergo Tomlinson-Harashima decoding before they are received by the decision block"**, as in claims 2, 17, 22, 31, 46; **"wherein the receiver is adapted to compute a cost function, indicative of a change in the coefficients of the adaptive filter, and convey the indication of the coefficients to the transmitter when the cost function exceeds a predetermined threshold"**, as in claims 7, 35, 60; **"wherein the Tomlinson-Harashima precoder comprises feedback loop filter having a filter response, and wherein the adaptive filter comprises a decision feedback equalizer having an equalizer response and an error predictor having an error prediction response , and wherein after the indication of the coefficients is conveyed to the transmitter and updated filter response is implemented in the feedback loop filter substantially as given by DFET'(z) = [1+DFET(z)][1+DFE(z) {1-EP(z)}-EP(z)]-1"**, as in claims 8, 12; **"wherein after the updated filter response is implemented in the feedback loop filter, the equalizer response DFE(z) and the error prediction response are set to zero"**, as in claim 9; **"wherein the FFE has an**

adaptively-determined feed-forward response and wherein the error predictor comprises a finite impulse response filter have a number of taps, and wherein when the indication of the coefficients is conveyed to the transmitter for implementation if the precoder, an updated feed-forward response is implemented in the FFE substantially as given by FFE'(z) = FFE(z) (1-EP(z^N))", as in claim 10; "**wherein the feedback loop filter comprises a finite impulse response filter having a predetermined number of taps and wherein a time-domain representation of the updated filter response is adjusted so as to implement the updated filter response using the predetermined number of taps"**, as in claim 11, 39; **"wherein the Tomlinson-Harashima precoder comprises feedback loop filter having a filter response, and wherein the adaptive filter comprises an error predictor having an error prediction response, and wherein after the indication of the coefficients is conveyed to the transmitter and updated filter response is implemented in the feedback loop filter substantially as given by DFET'(z) = [1+DFET(z)][1+DFE(z) {1-EP(z)}-EP(z)]-1"**, as in claim 13; **"determining the filter coefficient values comprises determining a decision feedback equalization response and an error prediction response, and wherein precoding the sequence of input symbols comprises precoding symbols using a feedback loop filter having a filter response, and recalculating after the indication of the coefficients is conveyed to the transmitter to generate an updated filter response substantially as given by DFET'(z) = [1+DFET(z)][1+DFE(z) {1-EP(z)}-EP(z)]-1"**, as in claim 36, **"wherein processing the decision output values comprises, after the**

updated filter response is implemented in the feedback loop filter, setting the equalization response and the error prediction response to zero", as in claims 37; **"wherein processing the decision output values comprises applying the error prediction response using a finite impulse response filter having a number of taps, and wherein receiving an processing the signal at the receiver comprises applying feed-forward equalization to the signal with an adaptively-determined feed-forward response, and when the error prediction response is set to zero, adjusting the feed-forward response to an updated response substantially as given by FFE'(z) = FFE(z) (1-EP(z^N))"**, as in claim 38; **"wherein adjusting the time-domain representation comprises truncating the representation"**, as in claim 40; **"determining the filter coefficient values comprises determining a decision feedback equalization response and wherein precoding the sequence of input symbols comprises precoding symbols using a feedback loop filter having a filter response, and recalculating after the indication of the coefficients is conveyed to the transmitter to generate an updated filter response substantially as given by DFET'(z) = [1+DFET(z)][1+DFE(z) {1-EP(z)}-EP(z)]-1"**, as in claim 41; **"determining the filter coefficient values comprises determining an error prediction response and wherein precoding the sequence of input symbols comprises precoding symbols using a feedback loop filter having a filter response, and recalculating after the indication of the coefficients is conveyed to the transmitter to generate an updated filter response substantially as given by DFET'(z) = [1+DFET(z)][1+DFE(z) {1-EP(z)}-EP(z)]-1"**,as in claim 42; **"wherein precoding the**

sequence of input symbols comprises applying modulo operation to the input symbols with a predetermined modulo range, and wherein processing the equalized samples comprises determining a sequence of decision output values of the received samples over a range of values greater than the modulo range of the precoder, and determining the feedback filter coefficient values based on the decision output values", as in claim 47; **"decoding the equalized samples comprises applying the Tomlinson-Harashima decoder to the decision output values"**, as in claim 48; **"decoding the equalized samples comprises applying the Tomlinson-Harashima decoder to the equalized samples with out first having processed the equalized samples using the adaptive feedback filter"**, as in claim 49; **"updating the value of DFET(z) comprises recalculating DFET(z) to generate an updated filter response DFET'(z) = [1+DFET(z)][1+DFE(z) {1-EP(z)}-EP(z)]-1"**, as in claim 52 and 53; **"wherein processing the equalized samples comprises applying the error prediction response using a finite impulse response filter having a number of taps, and wherein updating the value FFE(z) comprises recalculating FFE(z) to generate an updated response FFE'(z) substantially as given by FFE'(z) = FFE(z) (1-EP(z^N))"**, as in claim 54; **"processing the equalized samples comprises applying decision feedback equalization to the samples, so that the filter coefficient values comprise values corresponding to a decision feedback equalization response, and wherein updating the value of DFET9z) comprises and recalculating DFET(z) to generate an updated filter response DFET'(z) substantially as given by DFET'(z) = [1+DFET(z)][1+DFE(z) {1-EP(z)}-**

EP(z)]-1",as in claim 55; **"processing the equalized samples comprises, after updating the value of DFET(z) and FFE(z), setting at least some of the feedback filter coefficient values to zero"**, as in claim 56; **"wherein using the feedback loop filter comprises applying a finite impulse response filter having a predetermined number of taps, and wherein updating the value of DFET(z) comprises adjusting a time-domain representation of the updated value so s to implement the updated filter response using the predetermined number of taps"**, as in claim 57; **"adjusting the time-domain representation comprises truncating the representation"**, as in claim 58; **"updating the values of DFET(z) and FFE(z) comprises determining initial values of DFET(z) and FFE(z) during a start-up phase of the transmitter and the receiver, and altering the values at intervals thereafter during an operation al phase of the transmitter and the receiver"**, as in claim 59.

Conclusion

9. The prior art made record of and not relied upon is considered pertinent to applicant's disclosure:

a. Huber et al. US Patent 6,519,282 discloses a method for digital transmission of information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 571-272-3047. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cicely Ware

cqw
November 13, 2004

Amanda Le

AMANDA T. LE
PRIMARY EXAMINER